Erratum: Atomic Mass Dependence of Hadron Production in Deep Inelastic Scattering on Nuclei

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A mistake in the computer program performing the power law fit of the numerical computation of the hadron attenuation ratio R_M has been detected. The mistake affects all fits which include the Xe nucleus. Below we present corrected results for table 2 and Figs. 8-10.

Based on the corrected calculation we revise our conclusion in ref. [1]. The $A^{2/3}$ power law for $1 - R_M$ in the absorption model remains also after including the Xe nucleus in the (c,α) fit.

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| | Theory | |
| | He (N) Ne Kr Xe | |
z	$c\,[10^{-2}]$	α
.25	$0.9 \pm {}^{0.9}_{0.4}$	$0.70 \pm {}^{0.15}_{0.17}$
.35	$0.8 \pm {}^{0.9}_{0.4}$	$0.72 \pm {}^{0.15}_{0.17}$
.45	$0.8 \pm {}^{0.9}_{0.4}$	$0.73 \pm {}^{0.15}_{0.17}$
.55	$0.9 \pm {}^{0.7}_{0.4}$	$0.71 \pm {}^{0.11}_{0.13}$
.65	$1.1 \pm {}^{0.8}_{0.4}$	$0.70 \pm {}^{0.10}_{0.13}$
.75	$1.4 \pm {}^{0.9}_{0.4}$	$0.68 \pm {}^{0.08}_{0.13}$
.85	$1.9 \pm {}^{1.2}_{0.5}$	$0.65 \pm {}^{0.06}_{0.12}$
.95	$3.3 \pm {}^{1.6}_{0.7}$	$0.57 \pm {}^{0.05}_{0.10}$

Table 2
Centroids of the contour plots in Fig. 8 with their uncertainties for the fit $1 - R_M = c(\nu, z, h)A^\alpha$ at fixed z bins. The correction affects only the fit with the Xe nucleus.

References

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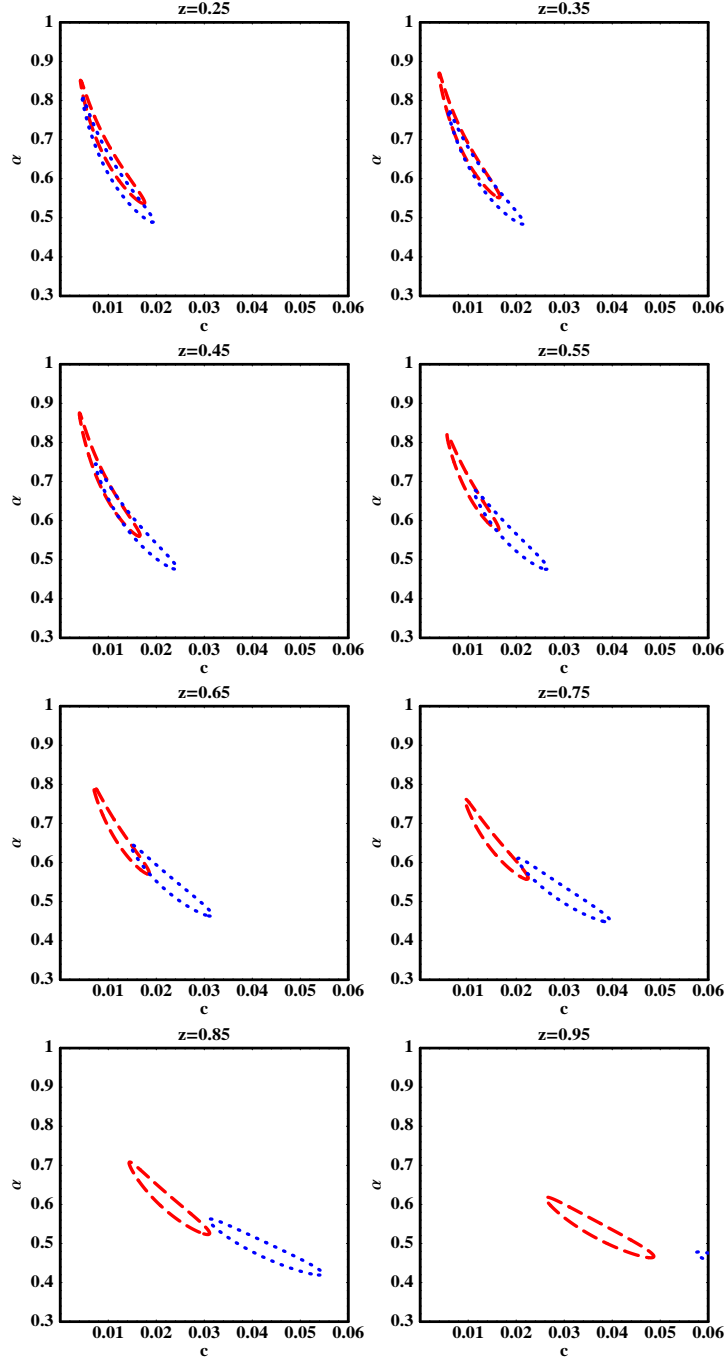
Fig. 8. χ^2 contour plots for the fit $1 - R_M = c(\nu, z, h)A^\alpha$ on the pure absorption model (dashed) and the full model (dotted) computation for ^{4}He, (^{14}N), ^{20}Ne, ^{84}Kr and ^{131}Xe nuclei, in fixed z-bins. Note that the contour for the full theory computation in the last z bin is outside of the plot range, to the right.
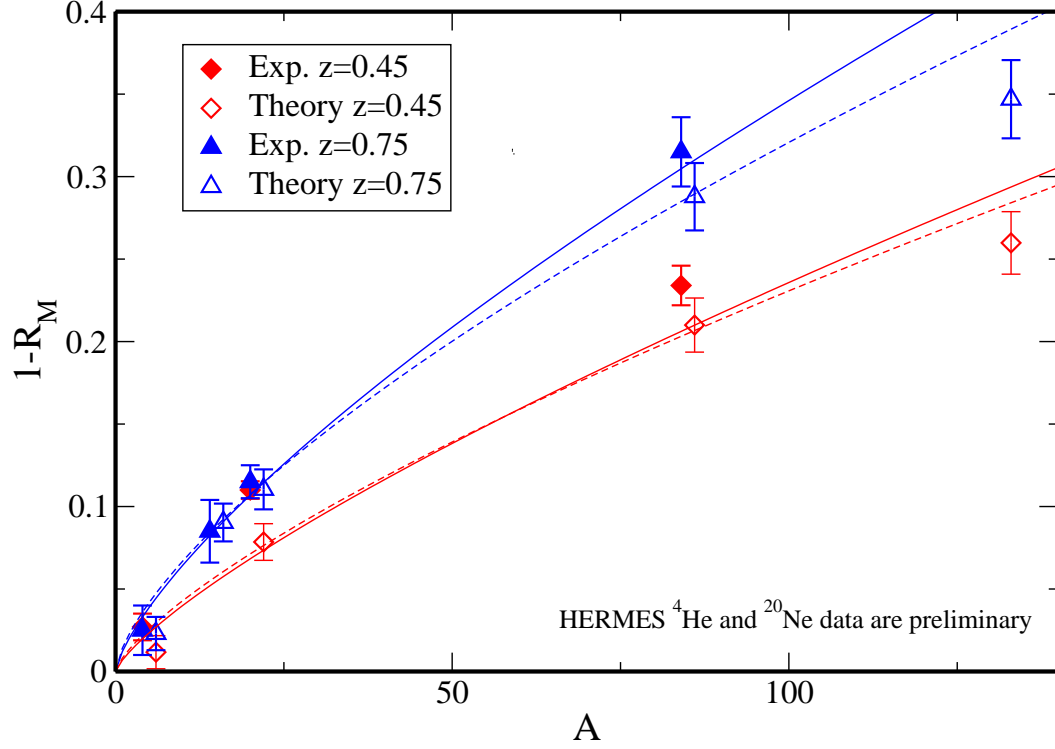
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Fig. 9. The published HERMES data for R_M for ^{14}N [2] and ^{84}Kr [3] and the preliminary data for R_M for ^{4}He [4] and ^{20}Ne [4] are shown as $1 - R_M$ for $z = 0.45$ and $z = 0.75$ as filled diamonds and filled triangles respectively. The pure absorption model results for $1 - R_M$ in the same z-bins and for the same nuclei plus ^{131}Xe are shown by empty symbols. The correction affects the dashed lines representing a fit $1 - R_M = cA^\alpha$ including the Xe nucleus.
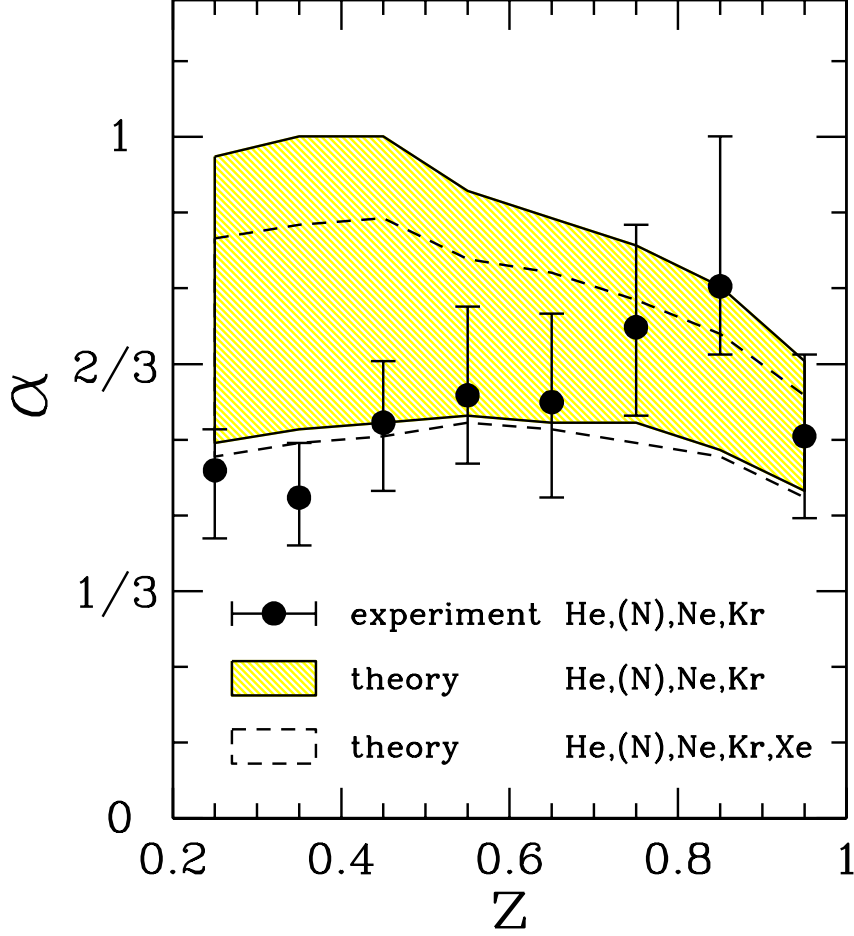
Fig. 10. Values of α as a function of z derived from experimental data (dots) and our pure absorption model computation (bands). The nuclei included in the fit are shown in the legend (the HERMES data on He and Ne are preliminary). The notation (N) indicates that this nucleus is included in the fit only at $z \geq 0.55$. Note that experimental errors are uncorrelated, but theory errors are point-to-point correlated. The experimental data and error bars as well as the theory band of α values for fits including the Xe nucleus have been corrected compared to [1].